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## No. XLVIII.

*Observations on the Eclipse of 16 June, 1806, made by Sir Leon De Witt Esq. of Albany, State of New-York, addressed to Benjamin Rush M. D. to be by him communicated to the American Philosophical Society.*

Read May 1807.

Albany, April 25th, 1807.

DEAR SIR,

WITH this I send you for the American Philosophical Society, a painting, intended to represent the central eclipse of the sun on the 16th of last June. It is executed by Mr. Ezra Ames, an eminent portrait painter of this place, and gives, I believe, as true a representation of that grand and beautiful phenomenon, as can be artificially expressed. The edge of the moon was strongly illuminated, and had the brilliancy of polished silver. No common colours could express this; I therefore directed it to be attempted as you will see, by a raised silvered rim, which in a proper light, produces tolerably well, the intended effect\*.

As no verbal description can give any thing like a true idea of this sublime spectacle, with which man is so rarely gratified, I thought this painting would not be an unwelcome present to the Society, or an improper article to be preserved among its collection of subjects for philosophical speculation. But, in order to have a proper conception of what is intended to be represented, you must transfer your ideas to the heavens, and imagine, at the departure of the last ray of the sun, in its retreat behind the moon, an awful gloom immediately diffused over the face of nature; and round a dark circle, near the zenith, an immense radiated *glory*, like a new creation, in a moment bursting on the sight, and for several minutes fixing the gaze of man in silent amazement.

\* This painting is deposited in the Hall of the Society, and strongly resembles the drawing made by Mr. Ferrer, 15 miles below Albany, which is represented in Pl. VI. Fig. 1.

The luminous circle on the edge of the moon, as well as the rays which were darted from her, were remarkably pale, and had that bluish tint, which distinguishes the colour of quick-silver from a dead white.

I attempted to make observations on the different stages of the eclipse, but for the want of a meridian, and glasses of sufficient powers, I am sorry I could not make them with the accuracy I wished. I however send them as they are,—they may possibly be of some use among the collections from other quarters. I have also taken some pains to ascertain the extent of the moon's shadow, in a northerly and southerly direction. The best information I have obtained is from Judge Thorn of the County of Washington, who assures me that the northern edge of the shadow passed nearly along the south bounds of Campbell's patent in the town of Granville, which on my map of the State, lies in latitude  $43^{\circ} 22'$  and longitude  $0^{\circ} 45'$  east of the meridian of New-York; and from Johannes Miller Esq. of the county of Orange, who determined the southern edge of the shadow in the town of Montgomery, to have crossed the road leading from Ward's bridge to Goshen, three miles and five chains, counted from the bridge. This will be in latitude of about  $41^{\circ} 30'$  and longitude  $0^{\circ} 14'$  west from the meridian of New-York. The middle of a straight line between those two points, falls on Hudson's river, in latitude  $42^{\circ} 26'$  which is near the village of New-Baltimore, at which place, therefore, the centre of the shadow must have passed, that is about fifteen miles below this city.

The following observations on the eclipse of the sun, June 16th, 1806, were made in the city of Albany, in latitude  $42^{\circ} 38' 42''$ , longitude  $73^{\circ} 47'$  west from Greenwich. The latitude has been ascertained by a series of observations on stars near the zenith, chiefly *a Lyræ* and *Capella*, with a sector made for me by the late David Rittenhouse. The longitude I computed by taking  $75^{\circ} 09'$  for Philadelphia, and deducting  $1^{\circ} 22'$  for the difference between Philadelphia and Albany. This difference is deduced from surveys connecting the two places. I regulated my clock by observations of equal altitudes of the sun, taken with one of Ramsden's best brass sextants, furnish-

ed with a small telescope. Four of these observations were made on the 14th, one on the 16th, and three on the 17th. In observing the eclipse, I used the achromatic telescope of my sector already mentioned, its magnifying power is about 30. The commencement of total obscuration is mostly to be depended on. Before the re-appearance of the sun, I lost it out of the field of the telescope, and I unfortunately omitted to remove the dark glass; I therefore noted the end of total obscuration, only by the naked eye, and of course cannot so much depend on it. It is probably taken some seconds too late. The arrival and departure of the penumbra, were taken tolerably accurate. The air was uncommonly serene, and afforded the finest opportunity for observations.

	h	m	s
Commencement of the eclipse, A. M. Apparent time. . . . .	9	50	12
Commencement of total obscuration. . . . .	11	8	06
End of . . . ditto. . . . .	11	12	57
End of the eclipse. . . . .	12	33	08
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Duration of total obscuration. . . . .	4	51	
Duration of the eclipse. . . . .	2	42	56

I intended to have forwarded this last fall, as soon as I could get the painting done, but the navigation of our river being obstructed earlier than usual, my intentions were defeated.

I am, with great regard  
Your obedient humble Servant,  
S. DE WITT.

Doctor Benjamin Rush.

The following errata have been found in the communications of J. J. De Ferrer in this Volume.—

- Page 163, line 31. Cayo Sta. Maria. Lat. for 23° 12' 00'' read 22° 39' 24''
- 164, last line, for Teneriffe, read In the Azores.
- 224, line 4. for Idem of the secular equation = 54'' 96 read  
Idem of the secular motion = 54 96
- 226, line 11. for 5<sup>h</sup> 35' 48'' read 5<sup>h</sup> 35' 38''
- 11. for 6 09 56 read 6 09 46
- 11. for 6 0 36 read 6 00 26
- 228, line 48. for  $\pi = \frac{E}{E + 1. \text{ tang. } \ominus} \times a = 15,8072$  read  
 $\pi = \frac{E}{E - 1. \text{ tang. } \ominus} \times a = 15,8072$
- 228, line 51. for  $\Pi' = \frac{E' - 1' \text{ tang. } \ominus'}{1'}$   $\times a' = 8,3865$  read  
 $\Pi' = \frac{E' + 1' \text{ tang. } \ominus'}{1'}$   $\times a' = 8,3865$
- 232, line 32. for apparent elongation at the ingress 934'' 416 read 934'' 437